

DOCUMENT RESUME

ED 047 649

24

HE 002 027

AUTHOR Huff, Robert A.
TITLE Inventory of Educational Outcomes and Activities.
Preliminary Draft.
INSTITUTION Western Interstate Commission for Higher Education,
Boulder, Colo.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau
of Research.
REPORT NO TR-15
BUREAU NO ER-8-0708
PUB DATE Jan 71
CONTRACT OEC-0-8-980708-4533 (010)
NOTE 38p.
EDRS PRICE EDRS Price MF-\$0.65 HC-\$3.29
DESCRIPTORS Community Services, *Educational Objectives,
*Educational Quality, *Evaluation, *Higher
Education, Institutional Environment, Measurement,
*Measurement Techniques, Research, Student
Characteristics

ABSTRACT

Careful definition and measurement of the activities and outcomes of higher education can contribute significantly to the resolution of some of the most vital issues related to the educational enterprise. The inventory of educational outcomes and activities presented in this report is divided into 4 sections: (1) instructional outcomes, including (a) cognitive attributes of students, such as general knowledge, competence in fields of special interest, basic and second language art skills, critical thinking and creativity; (b) affective attributes of students, such as attitudes, values and perceptions in the political, racial and ethical areas; and (c) tangible attributes of students, such as awards, health, grade point average, and affiliation with groups; (2) instructional environment variables, including (a) academic environment attributes, such as attrition and retention, faculty availability to students, and student stress; and (b) social environment attributes, such as racial and cultural mix, family attitude characteristics, and marriage rate; (3) research outcomes, such as research topics, new ideas and new inventions; and (4) public service outcomes, such as student and faculty involvement in the community, and cultural and recreational activities. For each of these variables, a definition/comment is provided and a suggested measurement approach is indicated. (AF)

EDO 47649

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

HE

**PRELIMINARY
DRAFT**

for review purposes only.

Preliminary Field Review Edition
Technical Report 15

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

TECHNICAL REPORT 15

U.S. DEPARTMENT OF HEALTH, EDUCATION
& WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED
EXACTLY AS RECEIVED FROM THE PERSON OR
ORGANIZATION ORIGINATING IT. POINTS OF
VIEW OR OPINIONS STATED DO NOT NECESSARILY
REPRESENT OFFICIAL POSITION OR POLICY.



Planning and Management Systems Division
Western Interstate Commission for Higher Education



Executive Director: WICHE
Robert H. Kroepsch

**Associate Director, WICHE, and
Director, Planning and Management
Systems Division:**
Ben Lawrence

Director, Research Program:
Robert A. Wallhaus

**Director, Development and Applications
Program:**
Warren W. Gulko

Director, Training Program:
Robert Huff

Program Associate:
Charles R. Thomas

Program Associate:
John Minter

The Western Interstate Commission for Higher Education (WICHE) is a public agency through which the 13 western states work together

- ... to increase educational opportunities for westerners.
- ... to expand the supply of specialized manpower in the West.
- ... to help universities and colleges improve both their programs and their management.
- ... to inform the public about the needs of higher education.

The program of the WICHE Planning and Management Systems Division was proposed by state coordinating agencies and colleges and universities in the West to be under the aegis of the Western Interstate Commission for Higher Education. The Planning and Management Systems Division program proposes in summary:

To design, develop, and encourage the implementation of management information systems and data bases including common data elements in institutions and agencies of higher education that will:

- provide improved information to higher education administration at all levels.
- facilitate exchange of comparable data among institutions.
- facilitate reporting of comparable information at the state and national levels.

This publication is in the public domain in accordance with the Ford Foundation, grant number 700-0434.

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

Technical Report 15

Preliminary Draft
for
Review Purposes Only

by

Robert A. Huff

January, 1971

THE PURPOSE OF THIS PAPER

One of the initial major objectives of the WICHE Planning and Management Systems endeavor was the development of methods of measuring the outputs of educational programs and activities. After lengthy consideration of the output measurement problem, WICHE is making a start toward development of an inventory aimed at identifying the benefits of higher education and suggesting possible methodologies for measuring specific variables identified within the inventory.

The material presented in this paper represents a first tentative step along an extremely difficult path. It is imperative that WICHE ascertain as quickly as possible whether the direction and approach initially chosen for this project are responsive to the needs of the higher education community, as well as responsive to the public interest in accountability.

Many institutions and education agencies, aware that WICHE is engaged in the development of output measures, have requested information regarding progress to date. This paper is intended to inform all interested persons about the nature and extent of WICHE's work in this area. At the same time, it will serve as an invitation to those interested in higher education to forward their comments and evaluations. All responses will be appreciated and carefully considered.

Ben Lawrence
Associate Director of Western
Interstate Commission for
Higher Education and
Director of the Planning and
Management Systems Division

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

Introduction

Improved accountability is one of the most frequently discussed subjects in higher education today. As educational institutions seek larger amounts of funds to meet rising demands for educational services, those responsible for the allocation of public and private funds are prompted to ask pointed questions concerning the efficiency of educational operations. Two questions associated with accountability inevitably arise: What are the true costs of educational programs and services? What are the outcomes and products that are produced by those programs and services? Virtually no one is against education. However, with the increase in crucial social and environmental problems, education is no longer viewed by everyone as having the highest possible priority for expenditure of ever increasing amounts of public and private funds.

There is currently a substantial thrust toward the development of program budgeting techniques and procedures for determining the true cost of educational programs and services. To examine the costs of educational programs with little or no evidence available related to the outputs of those programs offers relatively little advantage to educational decision makers. Almost all programs are good. The question is, which set of programs is best and most beneficial in light of current priorities? If all suggested or requested educational programs cannot be funded, how does one determine where available dollars will be

allocated without knowledge of the anticipated outputs of the competing programs? Educators, legislators and the public at large want to know precisely what they are buying and what they are likely to receive for their educational expenditures. This issue pervades much of the concern about the management of higher education. Careful definition and measurement of the activities and outcomes of higher education can contribute significantly to the resolution of some of the most vital current issues related to the educational enterprise.

Understandably, there is a certain amount of hesitancy on the part of many people within the educational community to engage in attempts to measure the outcomes of the educational programs they conduct. Can the difficult task of measuring educational outcomes be done with sufficient precision, reliability and validity to offer a true picture of the benefits of higher education? Many fear that it cannot. There is a human tendency to fear new information, especially when one is concerned about the completeness and validity of that information. Inevitably, measurement of outcomes will make some individuals and programs appear more productive and beneficial than others. It seems clear, however, that educators in an energetic and dynamic system should not tolerate the lack of close scrutiny of the educational operation. It is only through careful examination of outcomes that direction can be given to efforts to improve performance and more efficiently pursue objectives. Outstanding educational programs should be recognized while programs with low performance should likewise be identified. It seems impossible to justify an attitude which would exempt educational programs and services from careful examination and evaluation.

Decision making in an environment of limited resources and virtually unlimited demands requires cost-benefit analysis. Some sort of cost-benefit analysis has always been done by legislators, boards of regents and administrators and will continue to be used in the future. The problem is that the cost-benefit analysis of the past has been largely subjective and intuitive. Nonetheless, judgments have been made regarding program priorities and benefits. Those who would continue to deprive decision makers of information and formal evaluations related to educational outcomes are essentially arguing for the continuation of a potentially misleading kind of cost-benefit analysis and decision making. As compared with having no information concerning outputs of educational programs, even crude approximations having reasonable validity would be highly beneficial.

No one who has examined the task of evaluating higher education outcomes can avoid the conclusion that such evaluation is an extremely difficult undertaking. However, many voices citing the need for undertaking the outcome evaluation task are currently being heard. Dr. Frederick Balderston recently wrote:

---we have bumped hard into the question of output and its measurement because, among other things, we are seeking now to link the resources used to the results achieved--in other words, to link inputs with outputs. It turns out that in the long history of concern about the processes and activities of education, we have achieved only a very imperfect grasp of the nature of its results. We are having to tackle the problems of output definition and measurement under forced draft, for higher education has come to the front of public

attention both as a major social problem and as a major contributor to social change and economic development.--The job we have to do is urgent, important and controversial. If we had time, we might do well to sympathize with ourselves for taking it on.¹

Undoubtedly, initial attempts to evaluate educational outcomes will be crude and justifiably subject to some suspicion. On the other hand, if we continue to be intimidated by the technical difficulties and political resistance surrounding the outcome evaluation task, we can only continue to suffer increasing public criticism and reaction for our failure to engage in self-evaluation activity. Hopefully, we shall learn from the early attempts at evaluation and will be able to improve our measurement techniques over time in order to gain valid information concerning at least some outputs of higher education activities.

We currently hear a great deal about long-range planning and its importance to efficient operation of educational organizations. Management information systems which will help institutions forecast the resource requirements for various kinds and sizes of educational programs are currently being developed and implemented on a widespread basis. Output measures are needed in order to complement the program budgeting aspects of these management information systems.

¹Frederick E. Balderston, "Thinking About the Outputs of Higher Education," Ford Foundation Program for Research Program in University Administration, Paper P-5, University of California, May, 1970, Page 2.

In the future, educational planners hope to state long-range objectives in operational terms and make use of adequate information systems in guiding short-range activities toward the most efficient and effective pursuit of the long-range goals. Management of higher education has long been an art. That art has involved dealing with people, developing a spirit of cooperation, and coordinating the efforts of many professionals so that the total thrust of the institution is in the direction which is perceived most desirable. The art of administration will continue to be practiced. However, management information systems which produce objective data on both the costs of programs and the outcomes of programs, will add an element of management science to this administrative art.

Evaluation Approach

The first requirement of any approach to evaluating the outcomes of educational programs is that the methodology be both practical and possible. It would be fairly easy to identify many measures for variables related to students, instruction, research, public services, etc., which would be highly desirable for evaluation purposes but would be virtually impossible to obtain. A pragmatic approach dictates that the measurement attempts be in the realm of the practicable rather than the impossible.

If an array or inventory of outcome and activity measures related to educational programs is displayed, no one measure will assume a

dominant position. The WICHE approach to output measurement is to construct a profile or inventory of educational outcomes and activities. Viewing the total inventory, one should obtain not only new information concerning discrete variables of individual concern, but also develop a general understanding of the overall instructional effectiveness, academic environment and social contributions of the institution.

In constructing a comprehensive list of variables and concerns it is inevitable that many variables will be identified for which no measurement technique can be immediately developed. This does not mean that such currently unmeasurable variables should be ignored or left off the list. Those who view an inventory of educational outcomes should be made fully aware of the areas which have not been evaluated as well as the measures which have been derived. It appears likely that many of the most important areas of concern for particular constituencies will be unmeasurable during the initial stages of developing an outcome inventory. By presenting a comprehensive list of variables with measures for only the variables it is currently possible to evaluate objectively, those who examine the inventory of outcomes will be made fully aware of the shortcomings, gaps and omissions in the list of outcome measures presented. Also, it is hoped that the lack of evaluation techniques for certain highly important variables will stimulate researchers to investigate and develop new measurement techniques for such variables.

For intrainstitutional use, an inventory of educational outcome measures should be viewed as essentially neutral information. Each individual who examines such a list of measures will apply his own value system and establish in his own mind the relative importance of various items on the list. Different kinds and sizes of institutions have different objectives and should properly place different levels of importance on various outcomes and activities. A result which one institution considers highly successful might be considered only mediocre by another, depending upon the objectives and clientele of the respective institutions.

The cost of gathering information is always a legitimate concern. Many institutions may wish to concentrate their efforts on particular areas which are of greatest concern in their unique settings. It is highly unlikely that all institutions would choose to measure all variables on a suggested inventory list. By viewing the entire list and selecting those variables with the greatest relevance to their institutional objectives, each educational organization can construct at reasonable cost an output accounting structure which is most appropriate for its own decision makers and clientele.

Two basic criteria were used in selecting the variables for the suggested inventory. First, the inventory should be designed to be of service to many different kinds and levels of decision makers. Such decision makers include students, parents and faculty as well as administrators, regents and legislators. Therefore, a variable was included if it was felt to be of value to one or more of these groups.

Students need more pertinent information in order to make better decisions regarding the selection of institutions which will provide the most appropriate educational experience for them. Faculty contemplating association with a particular institution need information concerning its academic and political environment. Individuals responsible for allocation and utilization of educational resources need to account for those resources in terms of benefits derived and goals achieved. These and many like considerations were influential during the development of the list of variables on the WICKE Inventory of Educational Outcomes and Activities.

A second criterion used during construction of the list of inventory variables provides that a relatively complete characterization of the institution and its activities be furnished. Thus, the variables are intended to cover not only the academic and instructional aspects of institutional operation but also to reveal the social and economic impact and the benefits of research and public service activities.

Examination of the inventory (attached herewith) will disclose that it is divided into four sections as follows:

Section 1: Instructional Outcomes

- A. Cognitive Attributes of Students
- B. Affective Attributes of Students
- C. Tangible Attributes to Students

Section 2: Instructional Environment Variables

A. Academic Environment Attributes

B. Social Environment Attributes

Section 3: Research Outcomes

Section 4: Public Service Outcomes

The initial list of variables displayed in this paper relates primarily to the current status of institutions and the characteristics of students during their college years. Clearly, many of the most important contributions of higher education to the larger society stem from the productivity, participation and contributions of educated people some years after their college careers are completed. Follow-on studies which measure such later contributions and characteristics of students must eventually become an integral part of a complete output accounting structure. The focus during this initial stage, however, is on data related to students at times of entrance and exit from the institutions.

The current organization of the inventory is purely a matter of convenience and represents the thoughts of those who have worked on the project. One could easily rearrange the list of variables to reflect the priorities of different institutions. However, the WICHE format of the inventory should serve as a beginning reference point for all users.

The inventory presented within this paper contains three kinds of information. First, a title for each variable on the list is provided. Also, a definition and/or comment concerning the variable

is provided and for those variables for which it seems currently feasible, a suggested measurement approach is indicated. As previously mentioned, many variables have been placed on the list because of their perceived importance to comprehensive characterization of the institutions, even though no viable measurement technique can currently be identified. It is hoped that future research and investigation will help eliminate some of these measurement gaps.

The sources of suggested measures for the variables listed include test scores, data collected from student, faculty and other records, and responses to questionnaires. Recommendations for the exact procedures for administration of tests and questionnaires are yet to be determined. It also should be fully understood that the lists of variables and suggested measurement techniques are highly tentative and can be expected to change considerably as practitioners review them and researchers develop additional measures.

The development of test instruments and questionnaires is not an appropriate area of endeavor for WICHE staff. Rather, those organizations with long experience and established expertise in the testing field should engage in the development of such instruments and questionnaires as are required to support the implementation of the WICHE-defined evaluation approach. Well constructed, validated questionnaires and test instruments, which provide a convenient means of measuring specific variables among those identified within the WICHE inventory,

must be made available if outcome evaluation efforts are to become widespread. WICHE, in cooperation with other organizations, will expend considerable energy on the identification of an acceptable evaluation methodology and the list of variables. Other organizations are expected to provide the measurement instruments and concomitant scoring and tabulating services to educational institutions.

Implementation

Implementation of measurement techniques to evaluate the outcomes of educational programs and activities will require the commitment of time, effort and money by institutions. Many individuals have suggested that such commitment of resources is well worth the anticipated consequence of having better information concerning the outcomes of higher education programs. Many questions will inevitably arise during initiation of such an evaluation effort. What is the best timing for submitting student and faculty questionnaires? How can student cooperation be gained in supplying carefully considered responses? What kind and volume of feedback is essential for questionnaire respondents? What sampling techniques should be employed? How will the evaluations be displayed and what are the aggregates of students whose characteristics and responses will be examined?

Some standardization of methodology must be employed from year to year if institutions are to gather historical data which will allow comparability and analysis over time. Also, standardization of methodology will be necessary in order for any interinstitutional exchange of evaluation data to occur. These and many other problems

must be dealt with in the future if effective output measurement programs are to be established on local campuses. The initial Inventory of Educational Outcomes and Activities is intended primarily to stimulate widespread dialogue. Undoubtedly, many critical issues are yet to be identified. With review by all segments of the educational community and with direction from task forces composed of students and institutional personnel, the current inventory is sure to be altered substantially. From this first effort, our only hope is to learn by placing ourselves in the precarious position of suggesting specific measurement approaches and listening carefully to the reactions which are generated. This first effort will establish a point of departure for improved efforts in the future.

Review Process

No standardized approach to the measurement of educational outputs can be accomplished without reasonable consensus among all those concerned with higher education. Therefore, WICHE urges careful examination of the attached Inventory of Educational Outcomes and Activities. Letters of comment concerning the adequacy of the inventory or regarding the general approach suggested by the inventory are solicited from all interested persons. Each comment will be carefully considered. The review responses should provide valuable direction for WICHE's future work in this area.

Many individuals have been involved thus far in the development of WICHE's approach to constructing an output accounting structure. In order to make a first step toward development of such a structure, WICHE,

the American Council on Education, and the Center for Research and Development in Higher Education at Berkeley conducted a National Invitational Seminar on the "Outputs of Higher Education", May 3-5, 1970, in Washington, D. C. Papers written by knowledgeable participants were distributed in advance of the seminar and each paper was discussed at length during the conference.* Contributors of major addresses and papers at the seminar included:

Dr. Alexander Astin
Office of Research
American Council on Education
Washington, D. C.

Dr. Fred Balderston
Vice President for Planning and Analysis
University of California
Berkeley, California

Dr. John Bradl
Director of the School of Public Affairs
University of Minnesota
Minneapolis, Minnesota

Dr. David G. Brown
Vice President for Academic Administration
and Provost
Drake University
Des Moines, Iowa

Dr. C. West Churchman
Professor of Business Administration
University of California
Berkeley, California

Dr. Alain Enthoven
Vice President
Litton Industries
Beverly Hills, California

Dr. Robbin Hough
Professor of Economics
Oakland University
Rochester, Michigan

*A publication of the seminar papers entitled, The Outputs of Higher Education: Their Identification, Measurement, and Evaluation, may be obtained by writing to WICHE, P. O. Drawer P, Boulder, Colorado, 80302.

Dr. John Miller
Dean of Graduate School
Yale University
New Haven, Connecticut

Dr. Kenneth Tollett
Center for the Study of Democratic
Institutions
Santa Barbara, California

Dr. John Vaizey
Department of Economics
Brunel University
London, England

Subsequent to the National Invitational Seminar a small committee of participants met in Boulder, Colorado, to organize the ideas generated in the conference. As a result of that work session, a tentative list of activity and output measures was constructed and has now served as the basis for the inventory presented in this paper. Additional review has been conducted with a group of students and representatives of various other segments of higher education. Following the national distribution of this paper, additional extensive review processes will be undertaken for each revision of the inventory.

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

A. Cognitive Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
General Knowledge	<p>The level of general knowledge across several broad fields. The change in students' general knowledge level over the period of their association with an institution is of special concern.</p> <p>Competence in Fields of Special Interest</p>	<p>Appropriate test instruments to be developed by organizations other than WICHE.</p> <p>The level of knowledge and competence in the particular fields in which the student elects to study. The changes which occur over the period of the student's association with an institution are of special concern.</p>
Basic Language Arts Skills: Reading	<p>The level of student competence in reading general material having in content and difficulty equivalent to the substance of college course work. Both reading speed and comprehension are of concern.</p>	<p>Appropriate test instruments to be developed by organizations other than WICHE.</p>
Composition	<p>The level of student competence in developing logical, clear statements related to college level material and expressing them in written form.</p>	<p>Appropriate test instruments to be developed by organizations other than WICHE.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

A. Cognitive Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Basic Language Arts Skills: (Cont.)	<p>Speaking</p> <p>The level of student competence in developing logical, clear statements related to college level material and expressing them in verbal form.</p>	Appropriate test instruments to be developed by organizations other than WICHE.
Second Language Skills	The level of student competence in reading and interpreting one or more language other than their native language.	Appropriate test instruments to be developed by organizations other than WICHE.
Critical Thinking and Reasoning	The ability to formulate and analyze problems and employ inductive and deductive reasoning as well as other logical processes in searching for solutions.	Appropriate test instruments to be developed by organizations other than WICHE.
Creativity	The ability to design, produce or otherwise bring into existence, new and original products, ideas or processes. The change in students' creative ability during the college years is of special concern.	Appropriate test instruments to be developed by organizations other than WICHE.
Other Cognitive Attributes of Students	Institutions may wish to undertake evaluation of such additional cognitive attributes of students as are of special concern.	

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

B. Affective Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
<p>Attitudes, Values and Perceptions:</p> <p>Political</p> <p>The degree of acceptance of democratic processes, institutions, and conventions as opposed to authoritarian attitudes and values. Also, the degree of political participation.</p> <p>Racial</p> <p>The degree of tolerance, acceptance and empathy in relating to those of races or national origins other than one's own.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or as new graduate students.</p> <p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or as new graduate students.</p>	<p>*If more disaggregate data are desired, discipline specialties could be used.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

B. Affective Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Attitudes, Values and Perceptions: (Cont.) Religious and Spiritual Commitment	<p>The degree of religiosity as well as adherence to the conventions, practices, and teachings of a recognized religious organization or sect.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or as new graduate students.</p>
Sexual Attitudes	<p>Attitudes toward sexual relations outside the bounds of monogamy, as well as toward homosexual relationships, abortion, and sex education.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p>
Ethical Values	<p>The range of ethical values which are accepted as moral guidelines for dealings between individuals or groups. (i.e., honesty, etc.)</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p> <p>*If more disaggregate data are desired, discipline specialties could be used.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

B. Affective Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Attitudes, Values and Perceptions: (Cont.)	<p>Achievement Motivation</p> <p>The degree of importance placed upon successfully completing substantive work which will have an identifiable impact or benefit (as viewed by the student and/or the larger society).</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p>
Materialism	<p>The degree of importance placed upon material wealth as opposed to humanistic values.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p>
Self Concept	<p>The degree of feeling and acceptance of one's self as having basic worth and value as a human being.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p> <p>*If more disaggregate data are desired, discipline specialties could be used.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

B. Affective Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Attitudes, Values and Perceptions: (Cont.)	<p>Intellectual Disposition</p> <p>The degree of desire to continue self-initiated study, inquiry or participation in artistic, literary, scientific or other intellectual or creative areas.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.* Also, for each student category indicate the distribution of responses at time of entrance as freshmen or new graduate students.</p>
Satisfaction with the General Educational Experience	<p>The degree of student satisfaction with the overall educational experience provided by the college or university.</p>	<p>Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.*</p>
Other Affective Attributes of Students	<p>Institutions may wish to undertake evaluation of such additional affective attributes as are of special concern.</p>	<p>*If more disaggregate data are desired, discipline specialties could be used.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

C. Tangible Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Degrees Earned	The number, type and level of degrees and certificates awarded to students during a specific time period (i.e., an academic year).	<p>Tabulate the distribution of degrees and awards of various types and levels by field of study.</p> <p>Tabulate the number of certifications received by students by type of certification and level of student.</p> <p>Using data provided by placement, employment offices, and by faculty, calculate the median, first and third quartile, and range for first position salaries accepted by students completing instructional programs within each of the HEGIS Discipline Divisions (or such other aggregations of program completers as may be meaningful for the specific institution).</p> <p>Using grade report and transcript data typically kept by registrars, compile frequency distributions of grade point averages for program completers within each of the HEGIS Discipline Divisions (or for such other aggregations of program completers as may be meaningful for the specific institution).</p>
Certifications Received	<p>The number and type of professional and vocational certifications received by students associated with the institution (i.e., teaching certificates, C.P.A., Bar Exam, etc.).</p> <p>The distribution of monetary remuneration associated with the first position accepted by degree or program completers and by non-completers.</p>	<p>Using data provided by placement, employment offices, and by faculty, calculate the median, first and third quartile, and range for first position salaries accepted by students completing instructional programs within each of the HEGIS Discipline Divisions (or such other aggregations of program completers as may be meaningful for the specific institution).</p> <p>The grade point average of program completers and non-completers.</p>
Earning Power		<p>The grade point average of program completers and non-completers.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION I: INSTRUCTIONAL OUTCOMES

C. Tangible Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Awards and Recognitions	<p>Those awards and other honors granted to students in recognition of outstanding scholarship, service or citizenship. --Not to include grants and financial aid awards based in part on financial need.</p>	<p>Using data typically kept by deans of students, academic deans and/or departments, tabulate the number of each major kind of honorary award and recognition received by program enrollees in each HEGIS Discipline Division. Include fellowships, honorary fraternities and societies, etc.</p>
Affiliations with Social and Special Interest Groups	<p>The number of students electing to join the various organizations associated with the institution and its campus environment.</p>	<p>Using membership lists, tabulate the number of program enrollees within each HEGIS Discipline Division which affiliate with various types of social and special interest groups. Include social sororities and fraternities, hobby groups, cultural and academic groups, political groups, service groups, etc.</p>
Legal Violations	<p>Both the number of students involved in legal violations other than minor traffic violations and the number of such violations are of concern.</p>	<p>Using data provided by campus officials and civil law enforcement agencies, tabulate the number of legal violations committed by program enrollees within each HEGIS Discipline Division. The number of students involved as well as the number of violations should be recorded. Particular types of violations may also be of interest.</p>

SECTION I: INSTRUCTIONAL OUTCOMES

C. Tangible Attributes of Students	Definition and/or Comment	Suggested Measurement Techniques
Student Physical and Mental Health	Both injuries and disease are of concern.	Using campus hospital and medical records, tabulate the number of program enrollees within each HEGIS Discipline Division treated for accidental injury and for various major diseases (including mental illness). Exclude minor injuries and ailments which require no extensive care or treatment.
Social Sophistication	The degree of students' ability to conduct themselves appropriately in nearly any social setting. (Manners, etiquette, conversational skill, perception of being in control of the situation, etc.)	Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division. Also, indicate the distribution of responses for each student category at time of entrance.
Other Tangible Attributes of Students	Institutions may wish to undertake evaluation of such additional tangible attributes of students as are of special concern.	

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION II: INSTITUTIONAL ENVIRONMENT VARIABLES

A. Academic Environment Attributes	Definition and/or Comment	Suggested Measurement Techniques
Attrition and Retention	<p>The frequency with which students withdraw from the institution at various levels.</p> <p>Program Transfers</p> <p>Mean Time to Degree</p>	<p>Using registration, data tabulate the following for each level of student in each HEGIS Discipline Division:</p> <ol style="list-style-type: none"> 1) Number of full-time enrollees new to the institution. 2) Number of part-time enrollees new to the institution. 3) Number of full-time enrollees returning to the institution. 4) Number of part-time enrollees returning to the institution. <p>Using registration and enrollment data, tabulate the number of students at each level who transfer their major out of and into each HEGIS Discipline Division.</p> <p>Using historical enrollment data for program completers, compute the mean, median, and quartile times for reaching each type of degree or certificate awarded by the institution.</p> <p>Using faculty employment record data, tabulate the following for teaching faculty in each HEGIS Discipline Division:</p> <ol style="list-style-type: none"> 1) Number with earned doctorates. 2) Number with masters degrees. 3) Average and median total years of teaching experience. 4) Institutions of last degree.
Faculty Preparation		

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION II: INSTITUTIONAL ENVIRONMENT VARIABLES

A. Academic Environment Attributes	Definition and/or Comment	Suggested Measurement Techniques
Faculty Availability to Students	The degree of accessibility of teaching faculty to students for purposes of academic counseling, conferring and special assistance.	Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.
Academic Resource Availability to Students	The degree of accessibility of adequate library volumes, instructional equipment and other instructional materials to students at times and in locations which are convenient and conducive to student use.	Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division. Also indicate the quantity of library and other instructional materials held for each HEGIS Discipline Division.
Student Evaluation of Instruction in Major Field	Students' perceptions of the quality of the instruction they have received in their major field.	Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.
Academic Aptitude Distribution	The mix of scholastic aptitude levels among entering freshmen.	Using entering freshmen SAT scores, calculate the median and quartile SAT-Verbal and SAT-Math scores. (ACT or other test scores may be used.)
Student Stress	The degree of pressure and stress experienced by students of various levels majoring in different fields.	Tabulate the distribution of responses to appropriate student questionnaire items for various levels of student majors in each HEGIS Discipline Division.

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION II: INSTITUTIONAL ENVIRONMENT VARIABLES

A. Academic Environment Attributes	Definition and/or Comment	Suggested Measurement Techniques
Faculty Stress	<p>The degree of pressure and stress experienced by faculty of various ranks who teach in various fields and at various levels of instruction.</p> <p>Curriculum Innovation</p> <p>The amount of curriculum innovation and instructional experimentation occurring in each major field of instruction.</p>	<p>Tabulate the distribution of responses of faculty of various ranks in each HEGIS Discipline Division to appropriate faculty questionnaire items.</p> <p>Tabulate the distribution of responses for student majors in each HEGIS Discipline Division to appropriate student questionnaire items and the distribution of responses of faculty in each HEGIS Discipline Division to appropriate faculty questionnaire items.</p>
		<p>Institutions may wish to undertake evaluation of such additional academic environment attributes as are of special concern.</p> <p>Other Academic Environment Attributes</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION II: INSTITUTIONAL ENVIRONMENT VARIABLES

B. Social Environment Attributes	Definition and/or Comment	Suggested Measurement Techniques
Social Atmosphere on Campus	Student perceptions of the degree of social interaction and congeniality on campus. (By sex and student level.)	Tabulate the distribution of responses for each student level and sex to appropriate student questionnaire items.
Racial and Cultural Mix	The number of students and faculty of various races and cultures. (By sex and student level.)	Using registration data and faculty records, tabulate the number of students and faculty of each major racial and cultural category.
Socio-Economic Mix	The frequency of various levels of affluence among the student body.	No viable measurement technique identified at this time.
Family Attitude Characteristics	Identification of the distribution of values and attitudes of the parents of students. (Political, moral, racial, religious, etc.)	No viable measurement technique identified at this time.
On-Campus Residence	The numbers of students at various levels (by sex) who reside in campus housing.	Using campus housing records, tabulate the number of male and female students at each level who reside on campus in various types of campus housing.
Marriage Rate	The numbers of students at various levels (by sex) who are married.	Using registration and enrollment data, tabulate the number of male and female married students at each student level.
Physical Environment	The perceptions of students and faculty of the adequacy, maintenance, and general comfort of the physical plant and grounds.	Tabulate the distribution of responses of students of various levels to appropriate student questionnaire items and the responses of faculty to appropriate faculty questionnaire items.

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION II: INSTITUTIONAL ENVIRONMENT VARIABLES

B. Social Environment Attributes	Definition and/or Comment	Suggested Measurement Techniques
Governance	The perceptions of students and faculty regarding the adequacy of their participation in campus governance and administrative decision making.	Tabulate the distribution of responses of students of various levels to appropriate student questionnaire items. Tabulate the distribution of responses of faculty of various ranks to appropriate faculty questionnaire items.
Other Social Environment Attributes	Institutions may wish to undertake evaluation of such additional social environment attributes as are of special concern.	

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION III: RESEARCH OUTCOMES

Types of Research Activity	Definition and/or Comment	Suggested Measurement Techniques
Research Topics	The major topics of organized research projects conducted within the institution.	Tabulate the budgeted dollars and FTE professional staff associated with organized research projects related to various major topics.
Reorganization of Knowledge	Drawing together and restructuring existing theories, findings and statements in order to present existing knowledge in a new form designed to be more readily comprehensible or usable. (i.e., new text books, etc.) Both amount and quality are of concern.	No viable measurement technique identified at this time.
New Inventions and Developments (Applied Research Products)	The development of new products or procedures which have immediate practical application and can be implemented immediately. Both amount and quality are of concern.	No viable measurement technique identified at this time.
New Ideas and Concepts (Pure Research)	The development of new knowledge and theories without regard to their practical application, i.e., enlarging the storehouse of knowledge. Both quantity and quality are of concern.	No viable measurement technique identified at this time.
Personal Improvement of those Involved in Research	The production or improvement of human capital as a result of research endeavors. Instructional spinoff to those involved in research activities, including faculty, students, industry personnel, etc.	No viable measurement technique identified as this time.

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION III: RESEARCH OUTCOMES

Types of Research Activity	Definition and/or Comment	Suggested Measurement Techniques
Creative Arts	<p>The production of new works of art, music, plays, poetry, etc. Both quantity and quality are of concern.</p> <p>Institutions may wish to undertake evaluation of additional research activities of special concern.</p>	<p>No viable measurement technique identified at this time.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION IV: PUBLIC SERVICE OUTCOMES

Types of Public Service Activity	Definition and/or Comment	Suggested Measurement Techniques
Student Involvement in Community	The amount of time students contribute to participation in various organized activities outside the campus.	<p>Tabulate the responses of various levels of students to appropriate student questionnaire items.</p> <p>Tabulate the responses of faculty to appropriate faculty questionnaire items.</p>
Faculty Involvement in Community	The amount of time faculty contribute to participation in organized activities outside the campus.	<p>Those responsible for the conduct of cultural activities should keep records of community attendance at such events. From these records, tabulate community attendance at:</p> <ol style="list-style-type: none"> 1) Musical and Theatrical Productions 2) Art Exhibits 3) Lectures 4) Other
Cultural Activities	The nonstudent, nonfaculty attendance at various types of cultural activities offered by the institution.	<p>Those responsible for the conduct of recreation activities should keep records of community attendance at such events. From these records, tabulate community attendance at:</p> <ol style="list-style-type: none"> 1) Athletic Events 2) Other
Recreation Activities	The nonstudent, nonfaculty attendance at various types of recreation activities offered by the institution.	<p>Enrollment in noncredit courses offered to the general public.</p> <p>(Note: As in the PCS, continuing education courses for credit are considered as instruction rather than public service.)</p>
Continuing Education Activities		<p>Tabulate the contact hours of non-credit course work within each HEIS Discipline Division.</p>

INVENTORY OF EDUCATIONAL OUTCOMES AND ACTIVITIES

SECTION IV: PUBLIC SERVICE OUTCOMES

Types of Public Service Activity	Definition and/or Comment	Suggested Measurement Techniques
<p>Social Criticism</p> <p>Personal Services</p>	<p>The impact and effects of social criticism and confrontation between students and the community and between faculty and the community.</p> <p>The number of individuals receiving direct personal services of various types through the institution.</p>	<p>No viable measurement technique identified at this time.</p> <p>Tabulate the number of nonstudents served as:</p> <ol style="list-style-type: none"> 1) Health Care Patients 2) Counseling Clients 3) Psychological Testing Clients 4) Legal Advice Clients 5) Other
<p>Economic Impact on the Community</p>	<p>The many facets of economic benefit directly and indirectly accruing to the community as a result of the operation of the institution.</p> <p>Including:</p> <ol style="list-style-type: none"> 1) Purchases of goods and services by the institution, its students and its faculty. 2) Students available as employees. 3) Drawing power of the community as a place of residence for professional and skilled persons. 4) Other 	<p>No specific standard measurement techniques identified at this time. (It should be noted that numerous studies related to the economic impact of educational institutions have been conducted. Review of the methodology of such studies may help identify suitable economic impact measures.)</p>

SECTION IV: PUBLIC SERVICE OUTCOMES

Types of Public Service Activity	Definition and/or Comment	Suggested Measurement Techniques
Product Testing	<p>Service provided to industry, government and individuals in the area of materials quality testing, chemical analysis, etc.</p>	<p>Tabulate the number of individual product or material quality tests or analyses conducted by the institution and the number of individual clients receiving such services.</p>
Community Psychic Income	<p>Public pride in the institution and the various aspects of its operation.</p>	<p>No specific measurement technique identified at this time.</p>
Other Public Service Activities		<p>Institutions may wish to undertake evaluation of such additional public service activities as are of special concern in their unique environments.</p>

WICHE PLANNING AND MANAGEMENT SYSTEMS PROGRAM

EXECUTIVE COMMITTEE

Mr. John Bartram, Chairman (July, 1971) Director, Budgeting University of Colorado	Mr. Loren Furtado (July, 1972) Assistant Vice President University of California	Dr. Robert McCambridge (July, 1971) Assistant Commissioner for Higher Education Planning State Education Department
Dr. Thomas F. Bates (July, 1971) Vice President for Planning The Pennsylvania State University	Dr. Thomas Goins (July, 1971) Deputy Director State of Illinois Board of Education	Dr. William R. McConnell (July, 1971) Executive Secretary Board of Educational Finance
Mr. T. C. Burnette (July, 1971) University Registrar State University of New York	Mr. Robert L. Harris (July, 1972) Vice Chancellor California Community Colleges	Dr. Gordon Osborn (July, 1971) Assistant Vice Chancellor for Management State University of New York
Mr. Donald H. Clark (July, 1972) Chairman of the Higher Education Advisory Committee to the Midwest Council of State Governments	Dr. Harold Jacobsen (July, 1971) Vice President of Business and Finance Seattle Community College	Mr. James Ryan (July, 1972) Vice President for Planning and Budgeting University of Washington
Indiana University	Dr. Bert Y. Kersh (July, 1972) Dean of Faculty Oregon College of Education	Dr. E. F. Schietering (July, 1972) Associate Director for Research Southern Regional Education Board
Dr. Robert L. Clodius (July, 1971) Vice President University of Wisconsin System	Mr. Samuel Lawrence (July, 1972) Vice President for Administration Cornell University	Dr. Thomas S. Smith (July, 1972) President Lawrence University
Mr. Kenneth Creighton (July, 1971) Deputy Vice President for Finance Stanford University	Dr. Roy Lieuallen (July, 1972) Chancellor State System of Higher Education	Mr. Richard D. Strathmeyer (July, 1971) Vice President for Business Affairs Carnegie-Mellon University
Mr. Paul V. Cusick (July, 1972) Vice President for Business and Fiscal Relations Massachusetts Institute of Technology	Mr. Robert Mautz (July, 1972) Chancellor State University System of Florida	Dr. Martin Zeigler (July, 1972) Associate Provost University of Illinois
Dr. Alan Ferguson (July, 1971) Executive Director New England Board of Higher Education	Dr. Robert H. McCabe (July, 1972) Executive Vice President Miami-Dade Junior College	

TECHNICAL COUNCIL

Mr. Denis Curry, Chairman (July 1, 1972) Deputy Coordinator for Information Systems Washington Council on Higher Education	Dr. John Haugo (July 1, 1971) Director of Information Systems Minnesota State College System
Mr. John Chaney (July 1, 1972) Director University Office of Administrative Data Processing University of Illinois	Dr. Hans H. Jenny (July 1, 1971) Vice President of Finance and Business Director of Administrative Computer Services College of Wooster
Mr. James Eden (July 1, 1972) Director of Administrative Services and Assistant to the President University of Rochester	Dr. George Kaludis (July 1, 1971) Vice Chancellor for Vanderbilt University
Mr. John Gwynn (July 1, 1972) Associate Director Project INFO Stanford University	Dr. L. Joe Lins (July 1, 1971) Director of Research Wisconsin Coordinating Council for Higher Education

Mr. M. Charles McIntyre, Chief (July 1, 1972) College Financial Services Office of the Chancellor California Community Colleges
Mr. Garland P. Peed (July 1, 1971) Assistant Superintendent, Business State Center Junior College District
Mr. Ron Sapp (July 1, 1971) Director Office of Administrative Systems Johns Hopkins University
Dr. George B. Weathersby (July 1, 1972) Assistant Director Office of Analytical Studies University of California

NATIONAL ADVISORY PANEL

Dr. Douglas Conner, Executive Secretary American Association of Collegiate Registrars and Admissions Officers	Dr. J. L. Zwingle Executive Vice President Association of Governing Boards of Universities and Colleges
Dr. Richard E. Wilson, Director American Association of Junior Colleges	Mr. Charles L. Wheeler, Chairman Association of the Directors of Higher Education Facilities Commission
Dr. Frank Farner, Director American Association of State Colleges and Universities	Dr. Lyman Glenny Associate Director Center for Research and Development in Higher Education
Dr. Alexander Astin, Director American Council on Education	Dr. J. Boyd Page, President Council of Graduate Schools in the United States
Dr. William W. Jellema Executive Associate and Research Director Association of American Colleges	Senator David B. Kret Council of State Governments
Dr. Ted C. Gilbert Executive Director Association of State Higher Education Executive Officers	Dr. Richard Millard Education Commission of the States

Mr. Aaron Rosenthal, Comptroller National Academy of Sciences
Mr. D. F. Finn Executive Vice President National Association of Colleges and University Business Officers
Mr. Edwin W. Beach, Chief National Association of State Budget Officers
Mr. Ray H. Bezoni Vice President for Finance and Comptroller National Association of State Universities and Land Grant Colleges
Dr. Alan Ferguson, Executive Director New England Board of Higher Education
Dr. E. F. Schietering Associate Director for Research Southern Regional Education Board

OBSERVERS

Dr. James L. Miller, Director Center for Higher Education Michigan State	Mr. Justin Lewis Study Director National Science Foundation
--	---

Dr. Adolph Koenig Chief of Organization and Administrative Studies Branch
